(12) UK Patent Application (19) GB (11) 2 082 671 A

(21) Application No 8024049
(22) Date of filing 23 Jul 1980
(43) Application published
10 Mar 1982
(51) INT CL³
E05D 5/02 9/00
(52) Domestic classification
E2F 608 620 650 ED FA
(56) Documents cited
GB 1252702
GB 1168660
(58) Field of search
E2F
(71) Applicants
I. H. W. Engineering
Limited,
Stratford Road, Warwick
CV34 6AL
(72) Inventor
Frank Victor Waller
(74) Agents
Eric Potter & Clarkson,
14 Oxford Street,
Nottingham NG1 5BP

(54) Method of making a hinge flap

(57) A hinge flap suitable for use in forming a hinge for mounting a motor vehicle door is made by forming a pair of plates (1, 2), preferably metal plates, each having a semi-tubular depression (6) adjacent to one end thereof, and joining the plates together, for example by projection welding, such that the depressions together form a tube (7) for receiving a hinge pin. The method enables hinge flaps to be made more simply and cheaply than when using solid rolled steel stock, and comparable strength can be achieved with a reduction in weight.

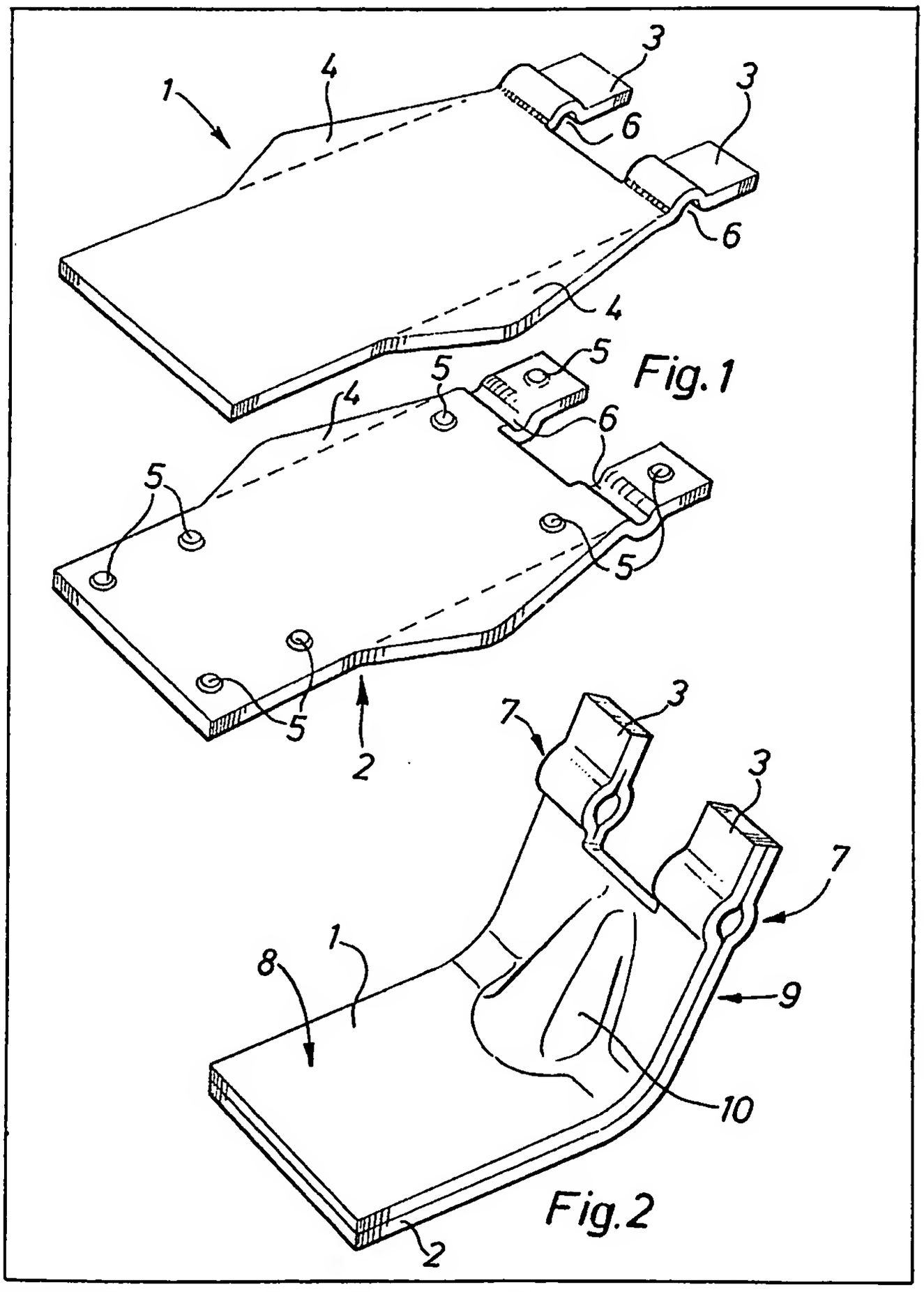

Fig.1

Fig.2

The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

GB 2 082 671 A

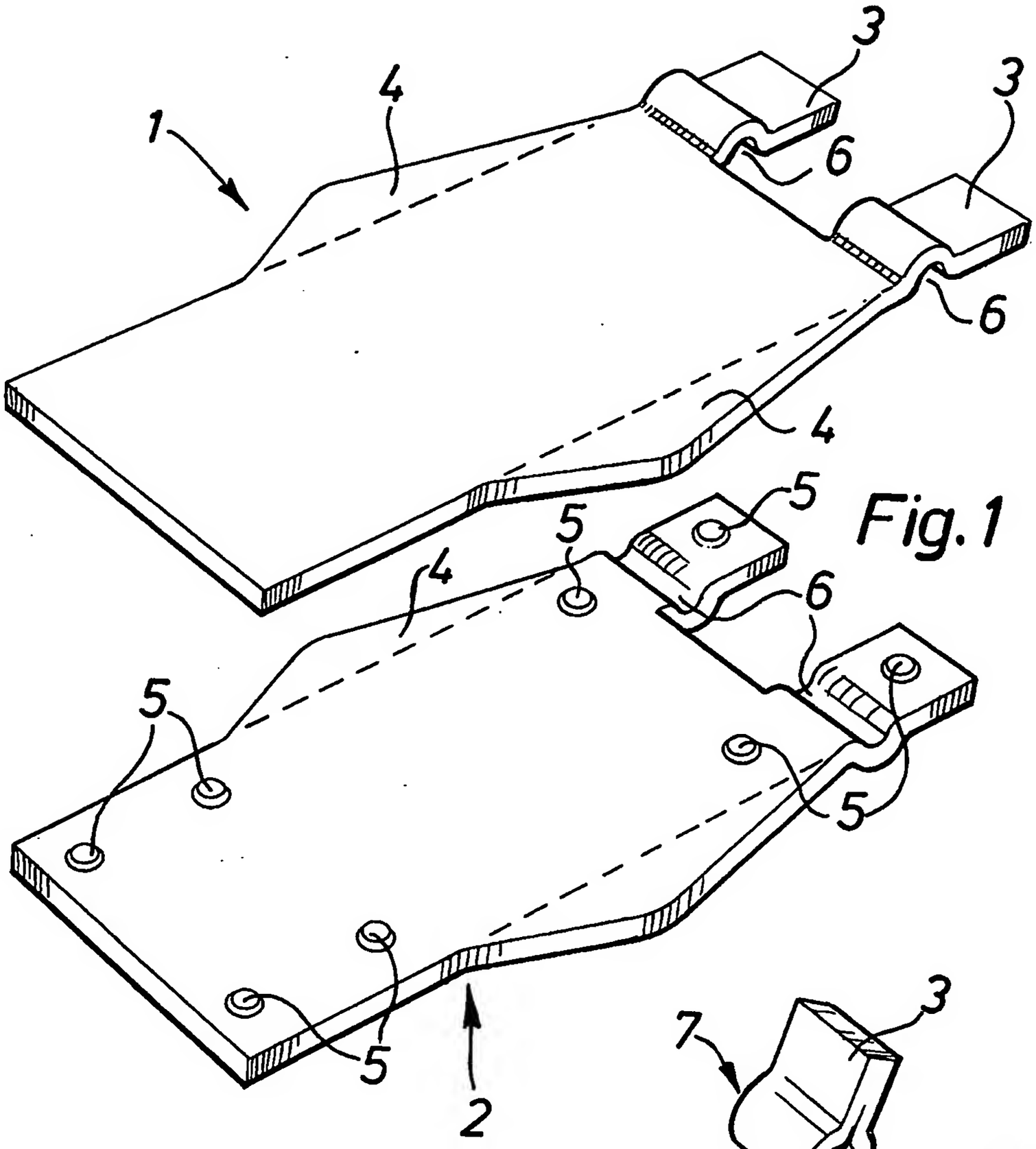

Fig.1

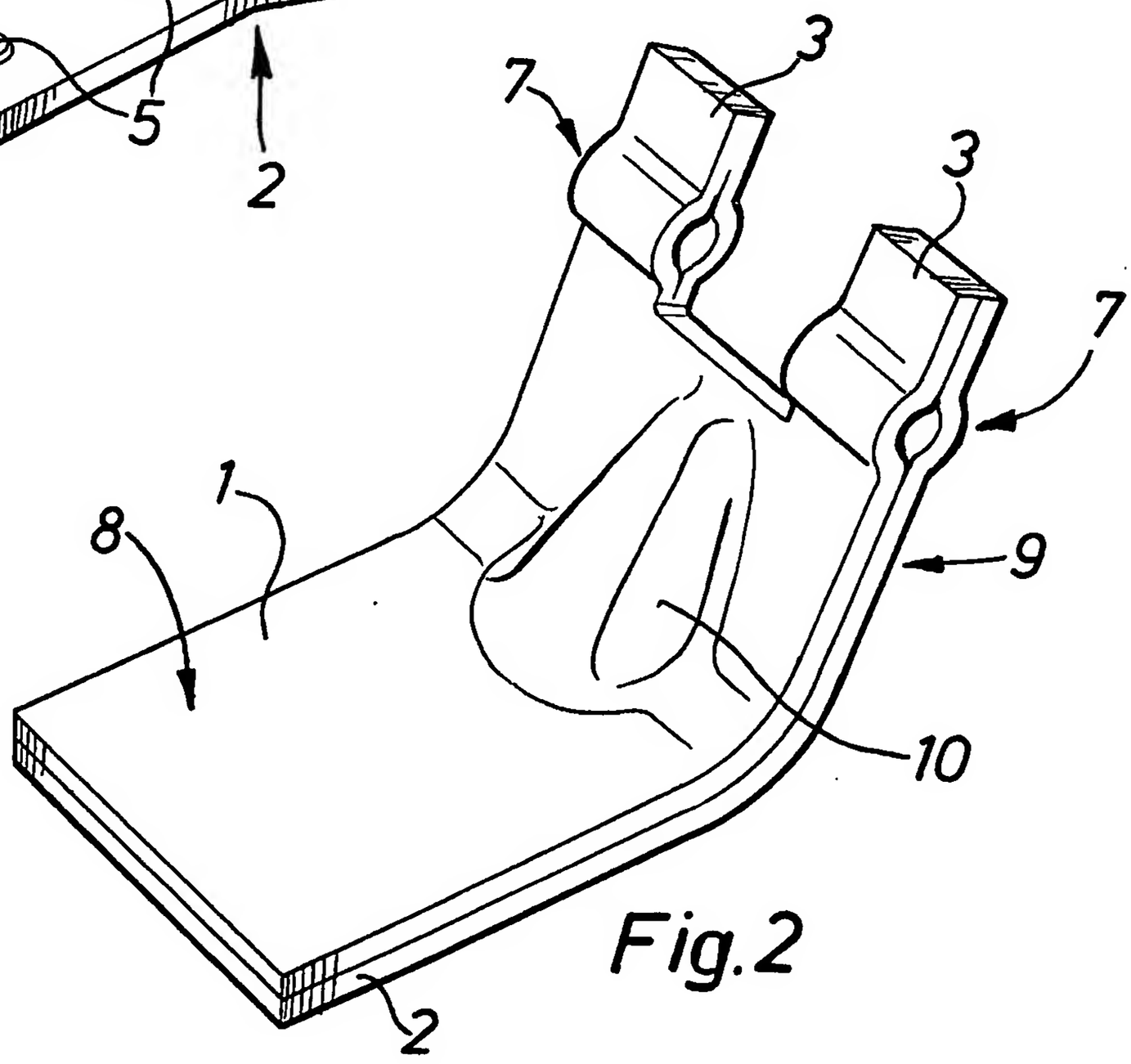

Fig.2

SPECIFICATION

Method of making a hinge flap

This invention relates to a method of making a hinge flap and is particularly concerned with making a hinge flap for a hinge for mounting vehicle doors.

Hinge flaps forming a part of a hinge mounting a vehicle door on a vehicle are typically either formed from rolled steel section having the desired profile so that the necessity for subsequent shaping is minimised, or by hot forging. The costs of hinge flaps formed by either method are high, since the manufacture of such flaps requires either expensive steel stock to be held or costly forging equipment to be installed and maintained. Further, the weight of such flaps is considerable and in the interests of vehicle fuel economy any savings in weight are desirable.

According to the present invention, a method of making a hinge flap comprises forming a pair of plates, preferably metal plates, each having a semi-tubular depression adjacent to one end thereof, and joining the plates together such that the depressions together form a tubular structure suitable for receiving a hinge pin therethrough.

The plates may be joined together by welding, preferably by providing a plurality of raised weld pips on one plate and projection welding at these pips.

The metal plates are most suitably steel plates, which may be cut or pressed to the desired shape from flat steel sheet, strip or bar. The generally flat hinge flap formed may be shaped by further shaping steps, for example bending, and pressing to form a strengthening rib or boss. Holes may be drilled to receive fixing bolts or studs at any stage of assembly, for example when the plates are first formed, or when final shaping of the hinge flap has taken place.

The hinge flap of the invention is simply and cheaply formed from flat steel stock. The flap is lighter than that formed from solid rolled steel stock and can have comparable strength.

Reference is made to the drawing, in which:

Figure 1 is a perspective view of the formed plates before welding together; and

Figure 2 is a perspective view of the completed hinge flap.

A pair of plates 1 and 2 is stamped or otherwise cut from a steel strip. Each plate 1 or 2 is generally rectangular in shape, but has two parallel arms 3 extending from one end thereof and an extra area of metal along part of each side forming a swaging allowance 4. The stamping operation, or a further pressing operation, raises eight weld pips 5 on one of the plates 1 and forms a semi-tubular depression 6 across each arm 3 of both plates 1 and 2. Apart from the weld pips 5 on the one plate 1 only, the two plates are identical.

The plates 1 and 2 are projection welded together face-to-face with the depressions 6 inwards to form tubular structures 7 (Figure 2) which will receive the hinge pin when the flap is assembled in a hinge. The flap is then bent to form two parts 8 and 9 having an obtuse angle between them. A strengthening rib or boss 10 is also pressed into the flap across the region of the bend. The swaging allowances 4 ensure that on completion of this operation, the sides of the flap are generally straight when viewed from an end.

The hinge flap is incorporated in a hinge by aligning the hinge-pin receiving bore of another hinge flap or bracket between the two tubular structures 7 on the arms 3 and passing a hinge pin through them. The ends of the pin can then be swaged over or otherwise prevented from falling out of the structures 7 and bore. The hinge flap illustrated and described is suitable for attachment to a vehicle door, the other flap or bracket being securable to the vehicle body. An example of a suitable hinge bracket for assembly with the hinge flap of the invention to form a hinge is that described in our co-pending application No. 8018729 (Serial No. 2077348).

CLAIMS

1. A method of making a hinge flap comprising forming a pair of plates, each having a semi-tubular depression adjacent to one end thereof, and joining the plates together such that the depressions together form a tubular structure suitable for receiving a hinge pin therethrough.

2. A method according to Claim 1, wherein the plates are metal plates.

3. A method according to Claim 1 or 2, wherein the plates are joined together by welding.

4. A method according to Claim 3, which comprises forming on one plate a plurality of raised weld pips, and then projection welding the plates together at these pips.

5. A method according to any preceding claim, wherein the plates are formed by cutting or pressing from flat steel sheet, strip or bar.

6. A method according to any preceding claim, wherein further shaping steps are carried out on the plates before joining the plates together.

7. A method according to Claim 6, wherein a strengthening rib or boss is pressed into at least one of the plates before the plates are joined together.

8. A method of making a hinge flap, substantially as described with reference to the drawings.

9. A method of making a hinge, which comprises making a first hinge flap in accordance with the method claimed in any preceding claim, and coupling the first hinge flap with a second flap by means of a hinge pin passing into the tubular structure of the first hinge flap.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1982. Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.